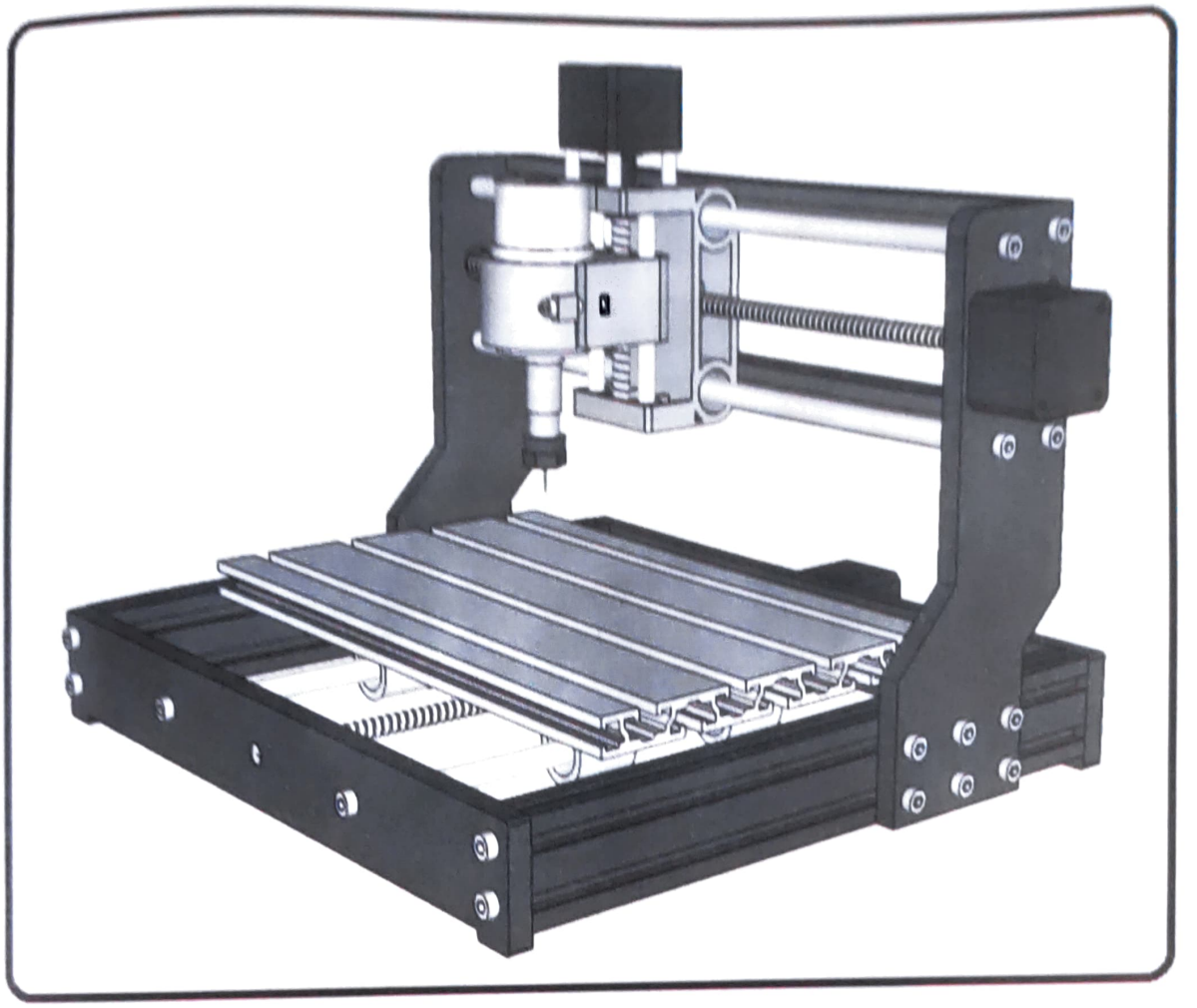
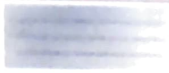


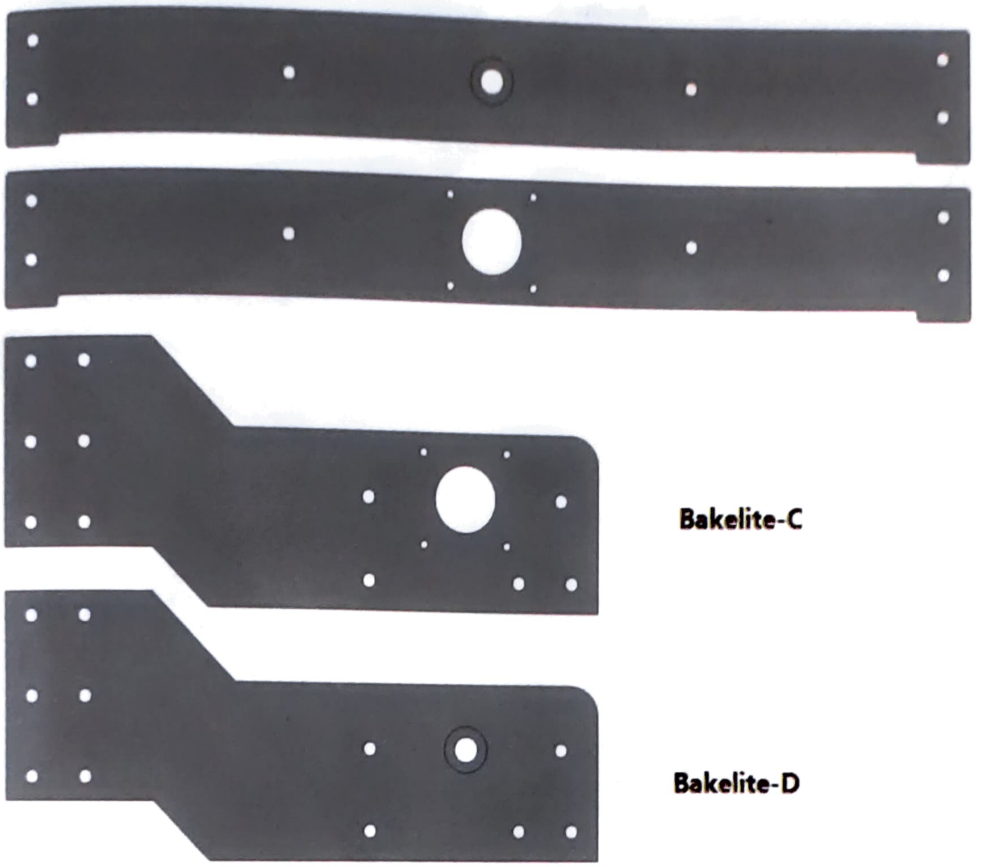
CNC3-3018Pro

Part A: Assembly instructions
V.1.2

Parts List:

Name	Type	Qty	Picture
Aluminum	2040*290mm	2	
	2020*360mm	2	
	15180*300mm	1	
Linear guide	10*290mm	2	
	10*360mm	2	
T8-4 screw	T8-4*295mm	1	
	T8-4*365mm	1	
Bakelite	Y-Axis	2	
	X-Axis	2	
XZ-Parts		1	
Power supply	24v	1	
Control Board		1	
Fasteners		1	
Spindle	775ER	1	
Stepper motor	42*34mm	2	
Y-Axis slider	10mm	4	
Y-Axis nut seat	T8-4	1	
CD		1	
Milling Cutter	20° 0.1mm	1	
USB cable		1	
Cable ties	3*200mm	1	
Wires	stepper & spindle	2	

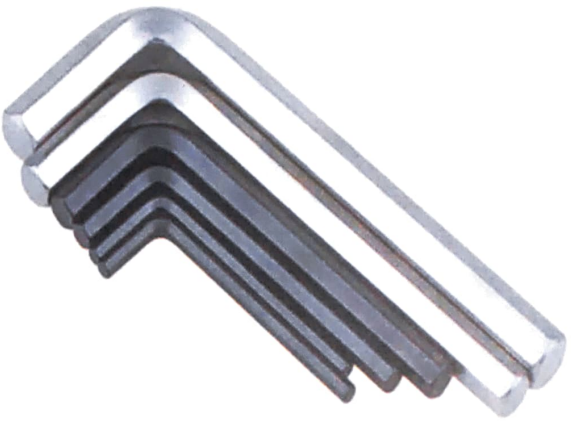
Bakelite overview



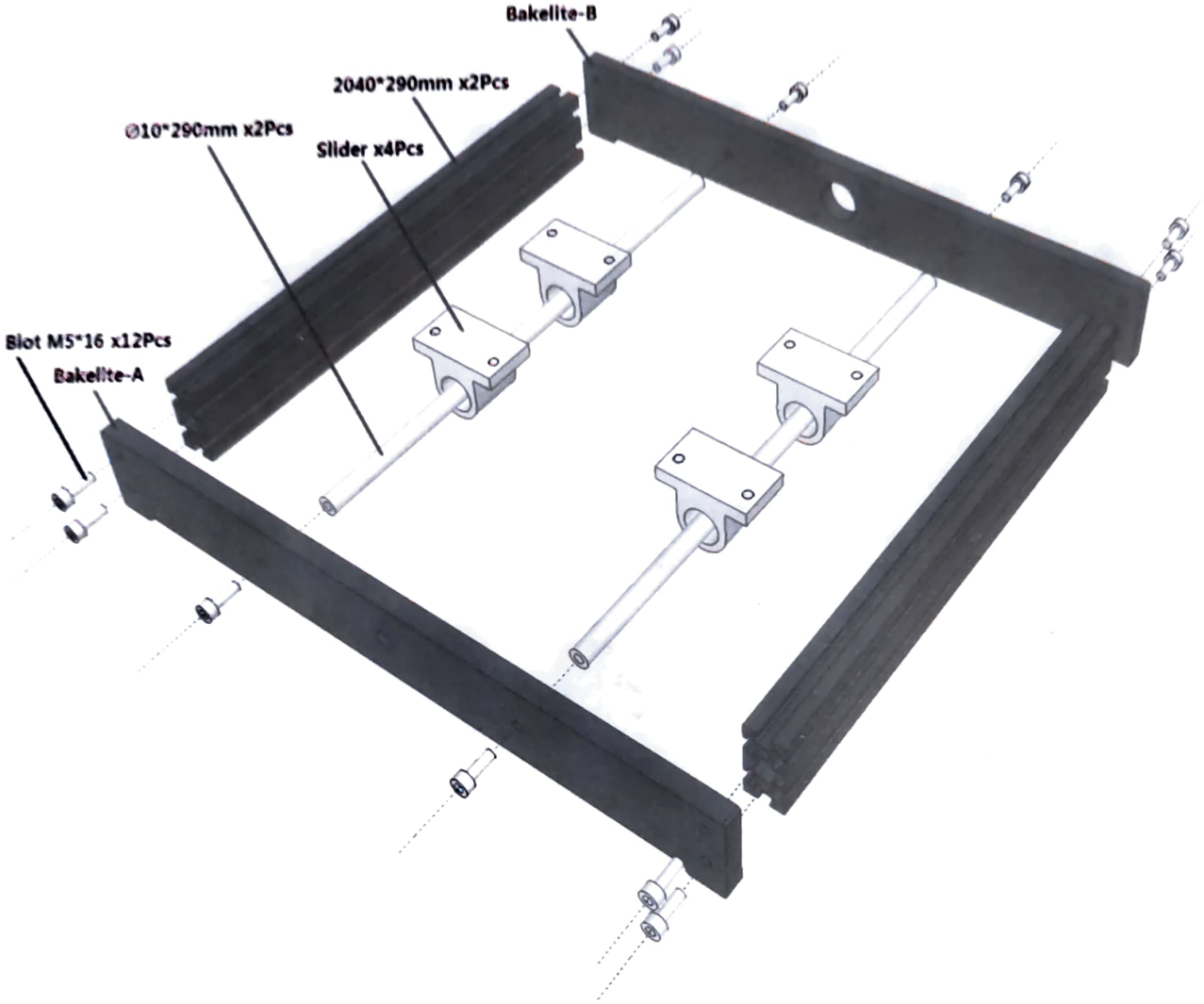
Tool

"⬭" = Used

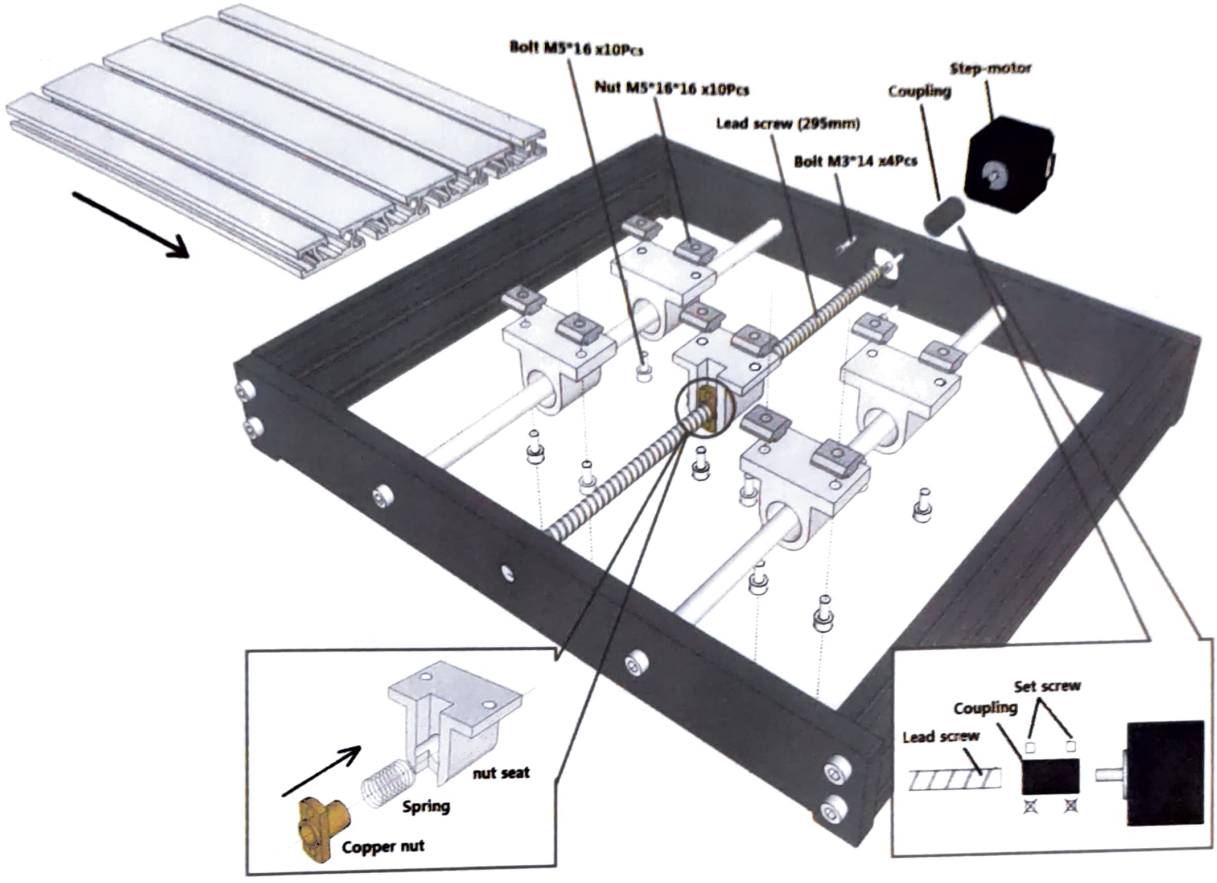
	Bolt	Set screw
~~1.5mm~~	M1.6 M2	~~M3~~
2.0mm	M2.5	M4
2.5mm	M3	M5
3.0mm	M4	M6 W1/4
4.0mm	M5	M8 W5/16
~~5.0mm~~	M6 W1/4	M10 W3/8



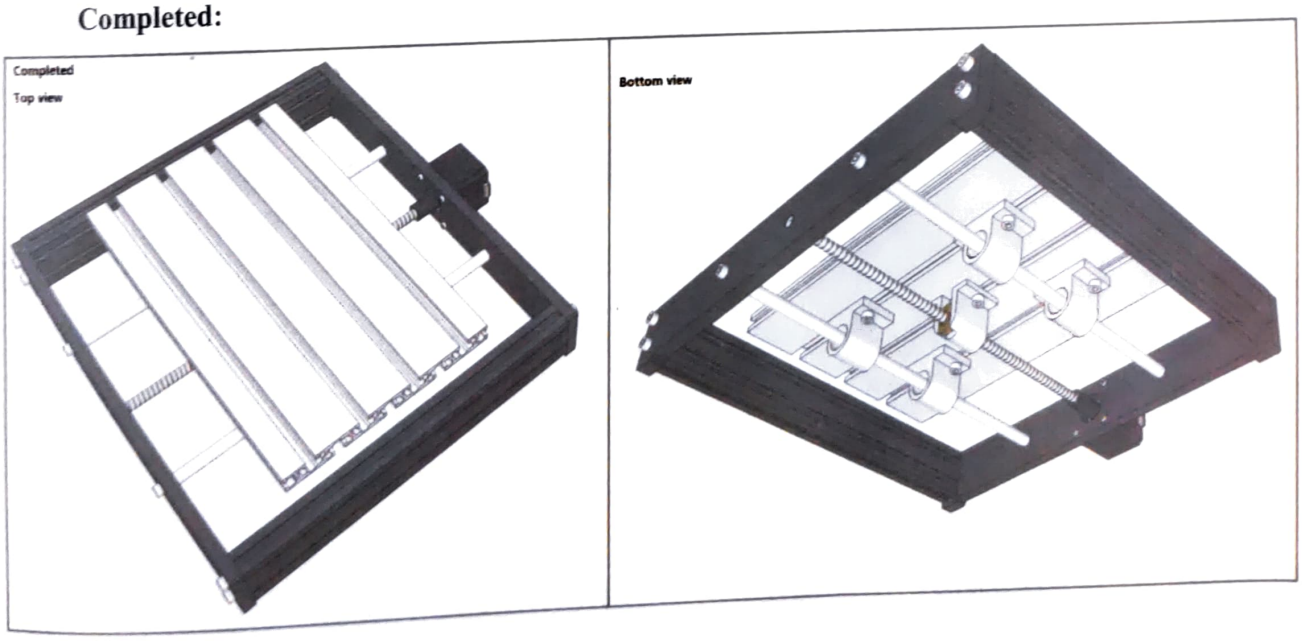
STEP1. Base Assemble



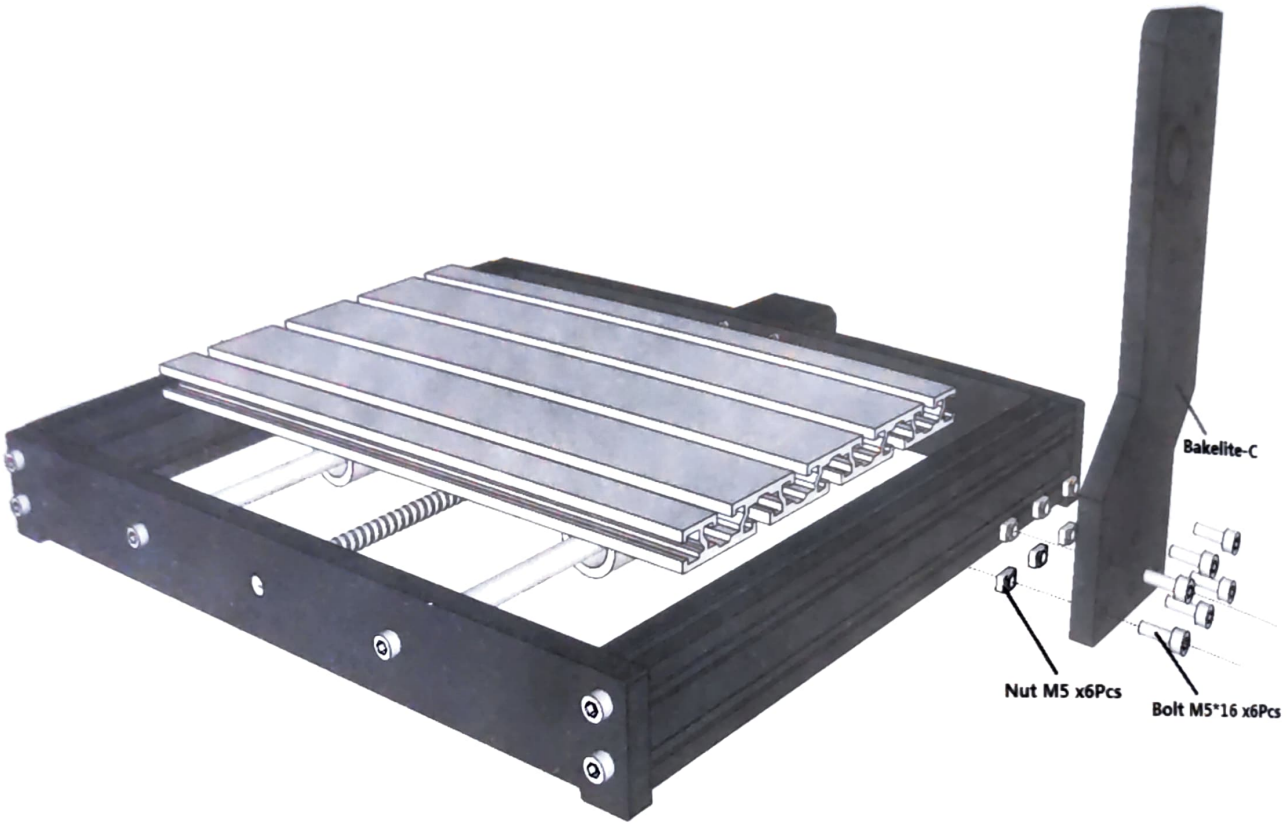
Step2. Table Assemble



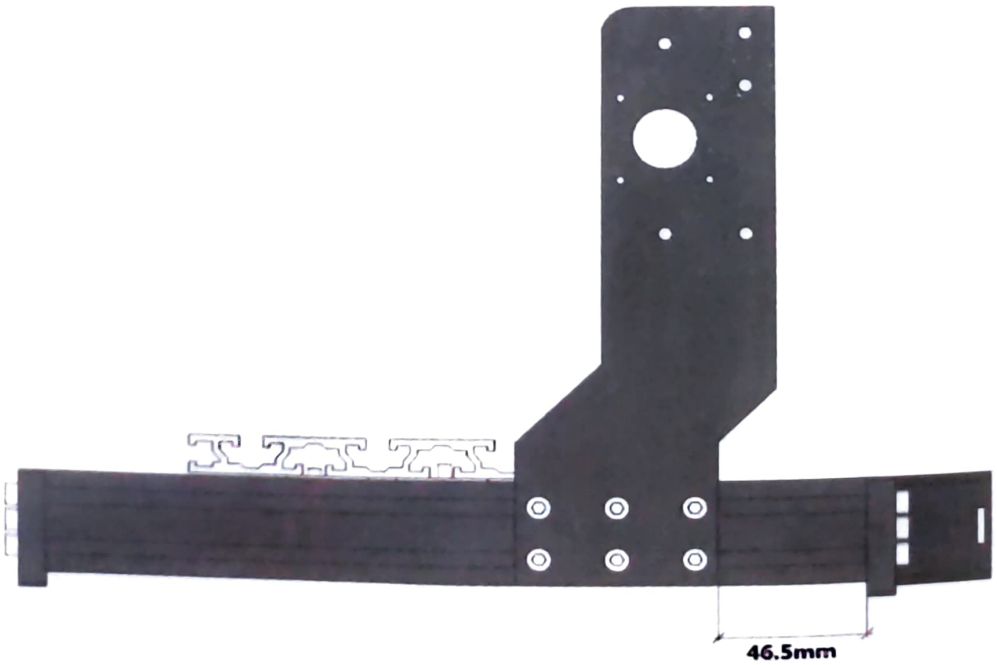
Completed:



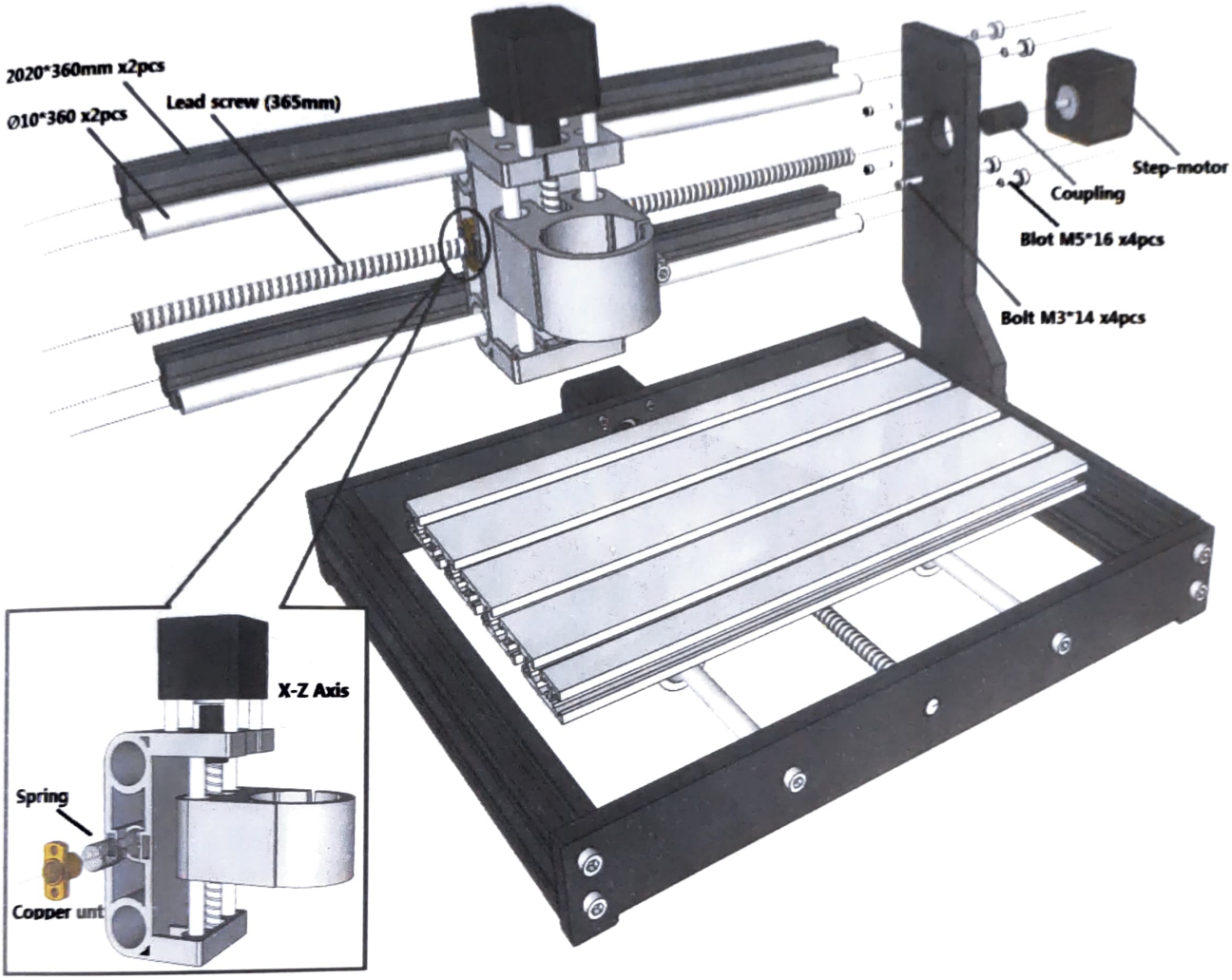
Step3. **Base & Bakelite-C**



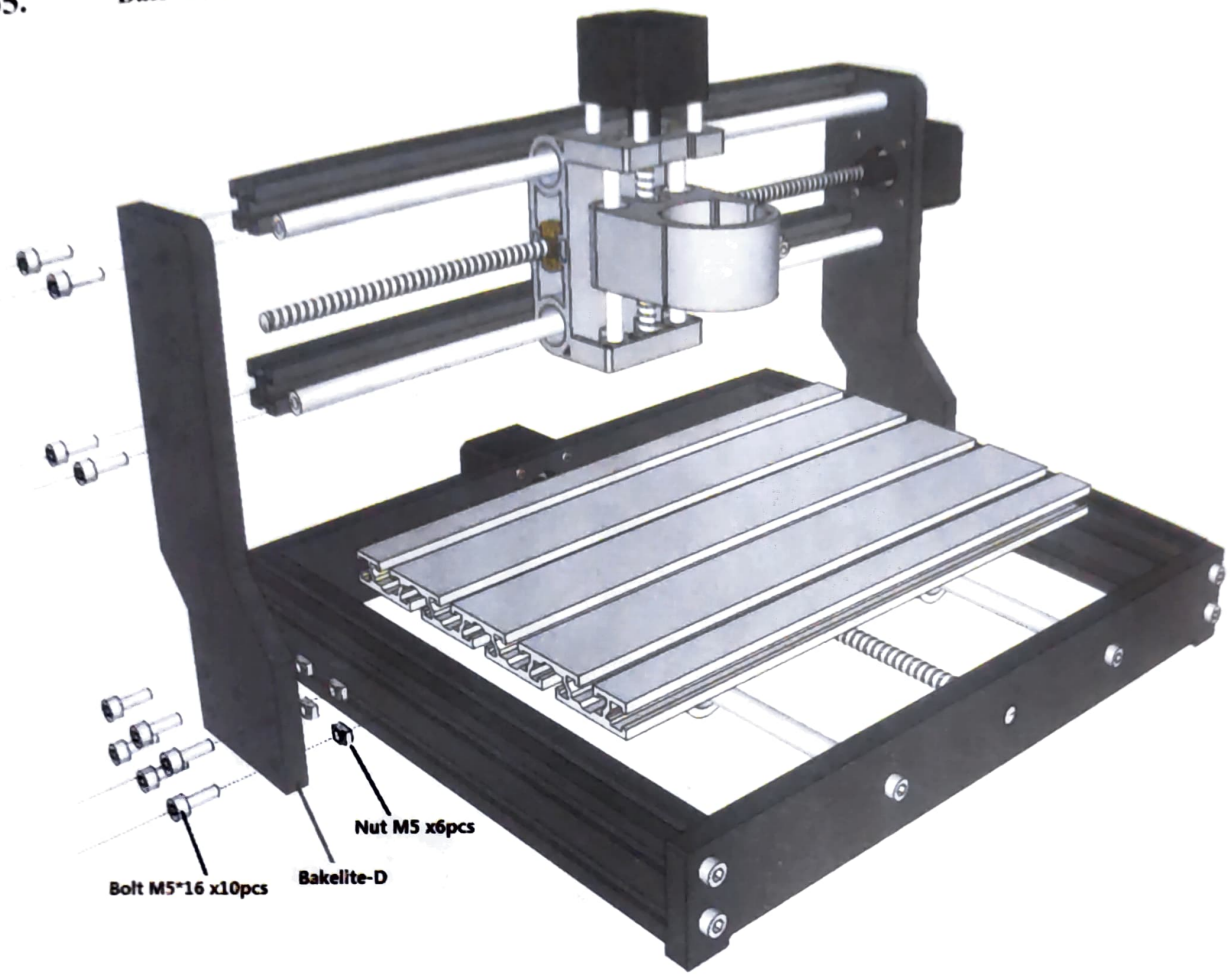
Completed & Ubiety:



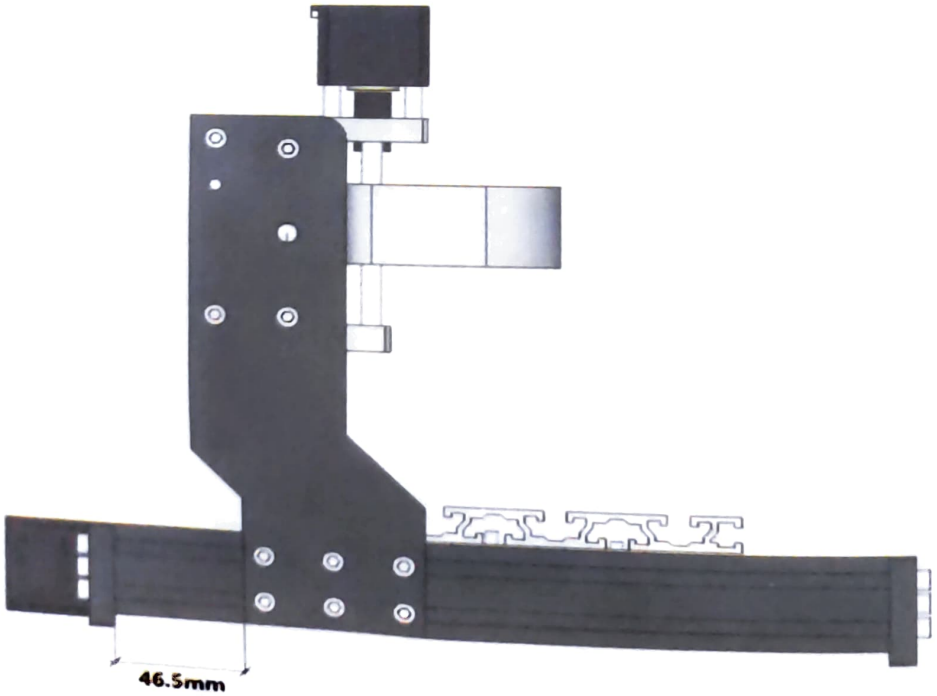
Step4. X-Zaxis



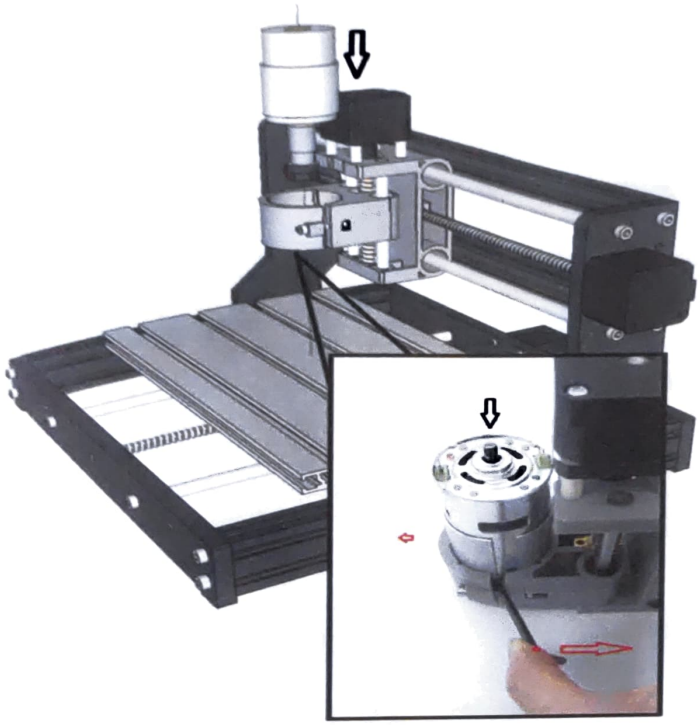
Step5. **Bakelite-D**



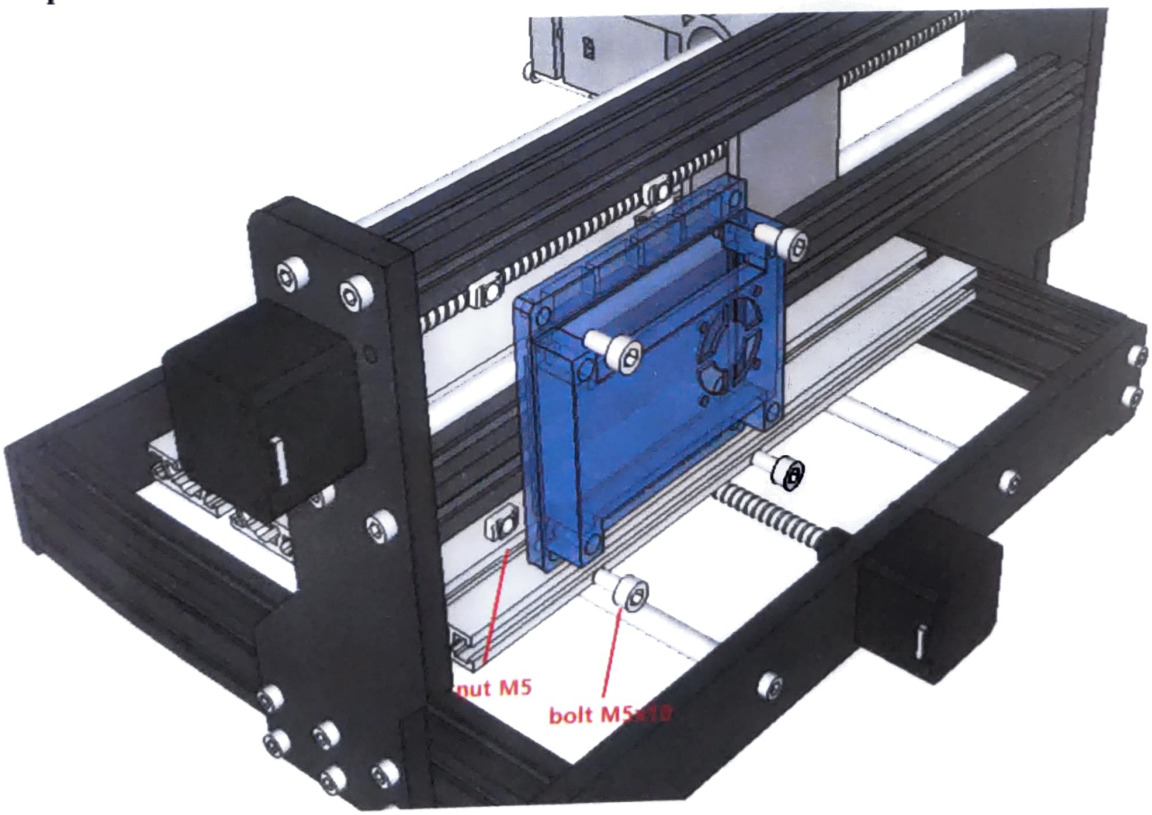
Completed & Ubiety:



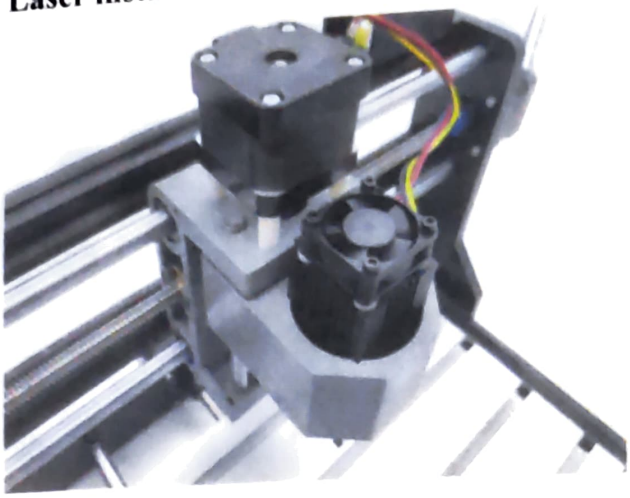
Step6. **Sipndle**



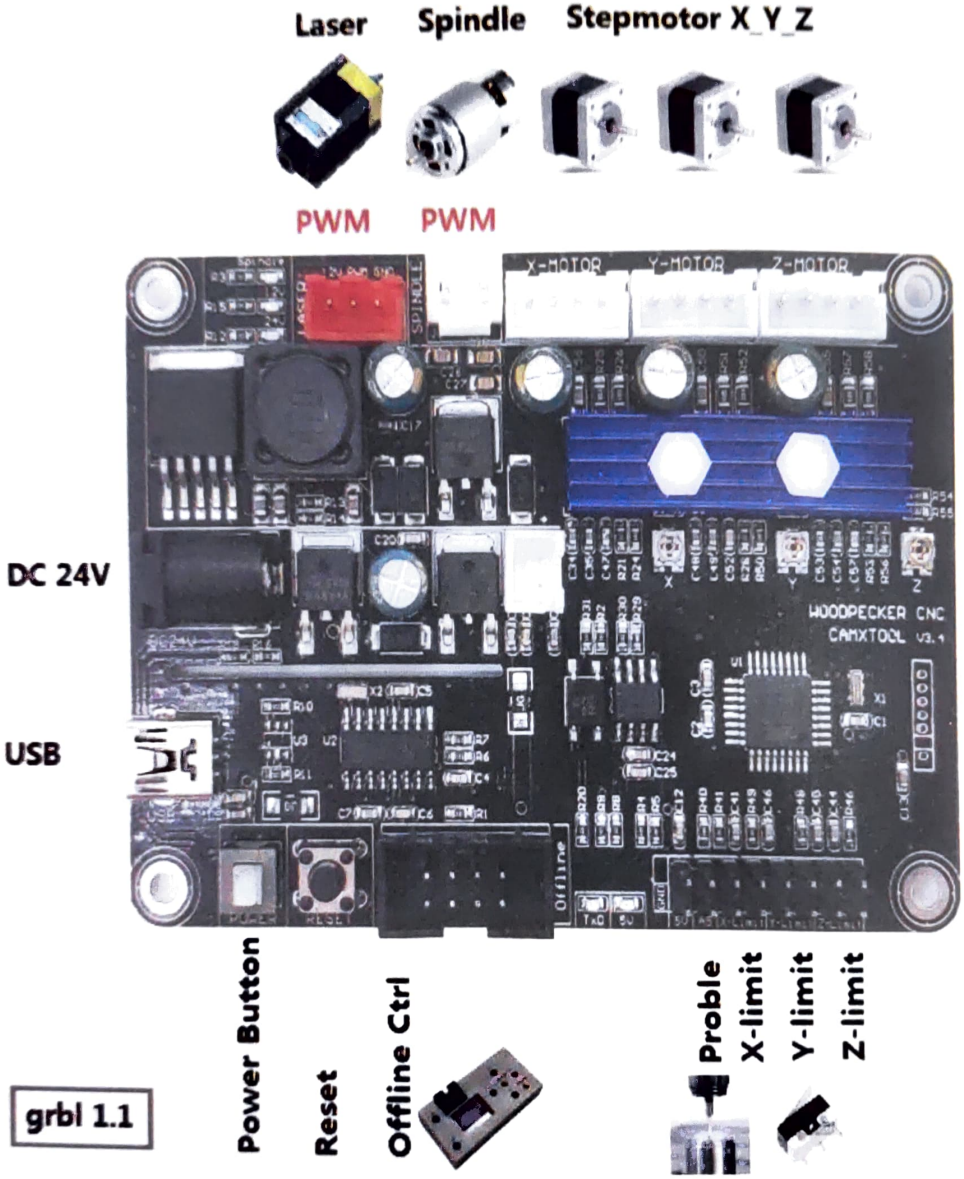
Step7. **Control board**



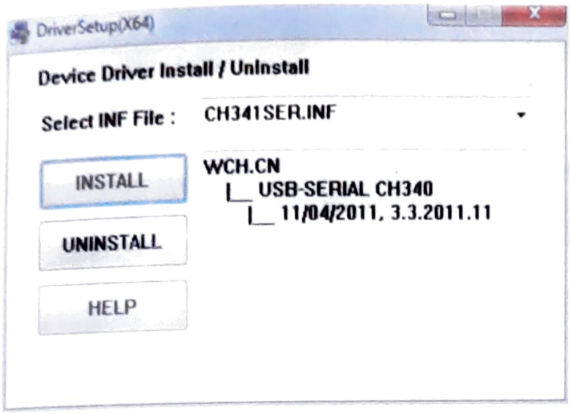
Laser install:

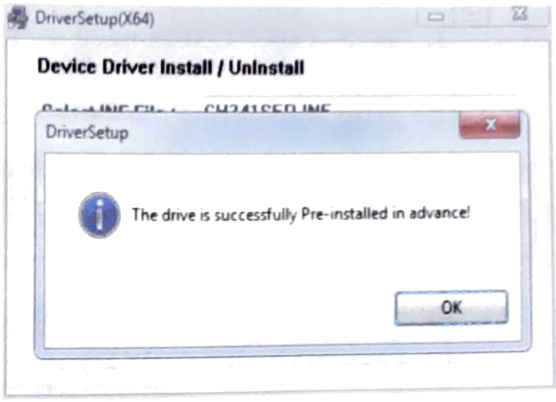


Control board description:



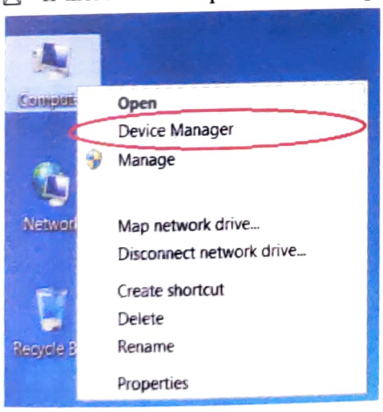
Driver install: (software --> Driver --> CH340SER.exe)

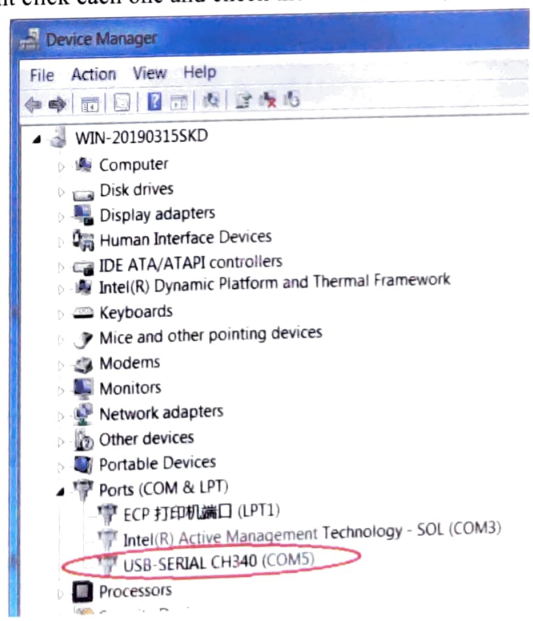




Determine your Machine's COM port:

- ☒ Windows XP: Right click on "*My Computer*", select "*Properties*", select "*Device Manager*".
- ☒ Windows 7: Click "Start" -> Right click "*Computer*" -> Select "*Device Manager*" -> "*Ports (COM & LPT)*"
- ☒ Your machine will be the USB Serial Port (COMX), where the "X" represents the COM number, for example COM5.
- ☒ If there are multiple USB serial ports, right click each one and check the manufacturer, the machine will be "*CH340*".





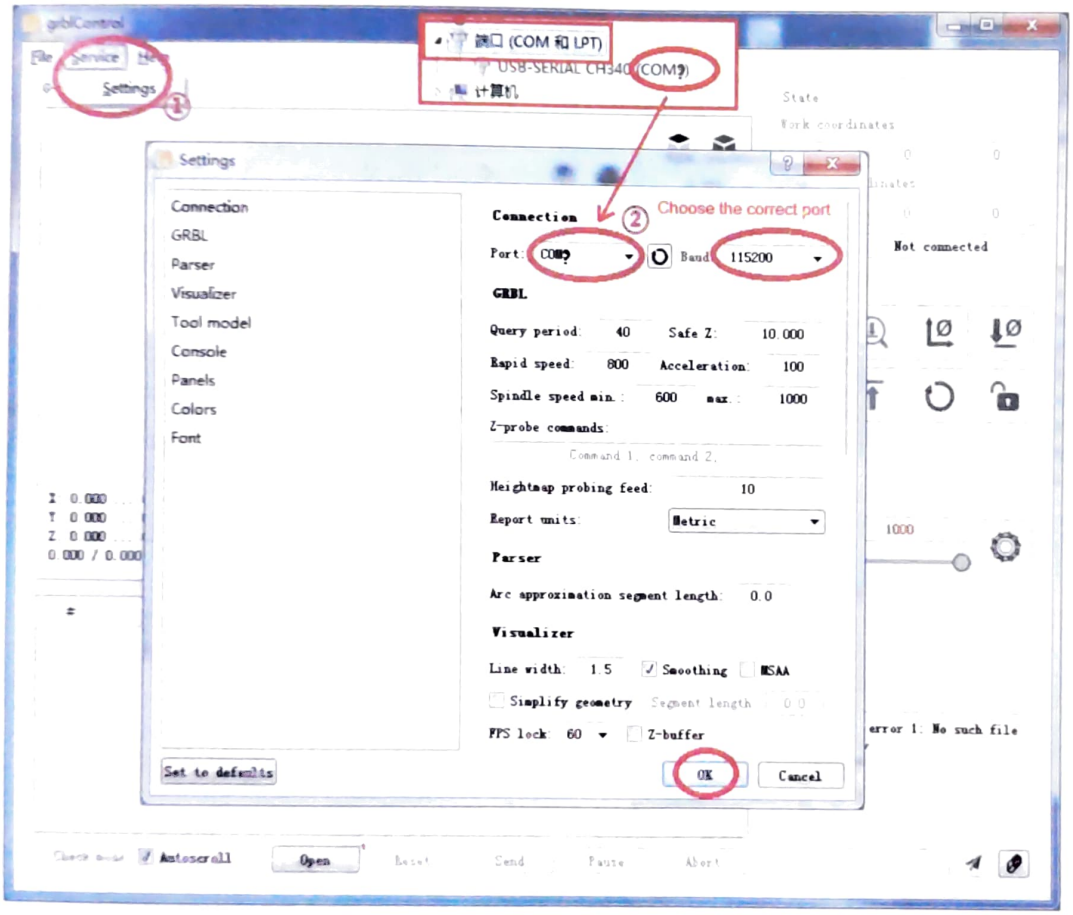
Mode-3Axis-A:(Machining with spindle) & Control with PC

- Use the Usb cable for connecting computers.(Don't plug in the offline controller!)

- Open grblControl software(software -> Grblcontrol -> grblControl.exe)

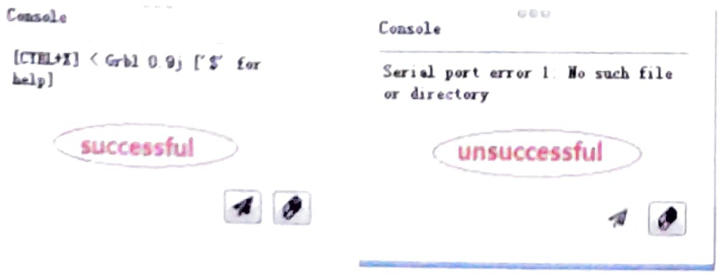
Notice: **1. The 3-Axis NC files need users to design by themselves using CAM software.**

2. The grblControl just send the NC file to machine.

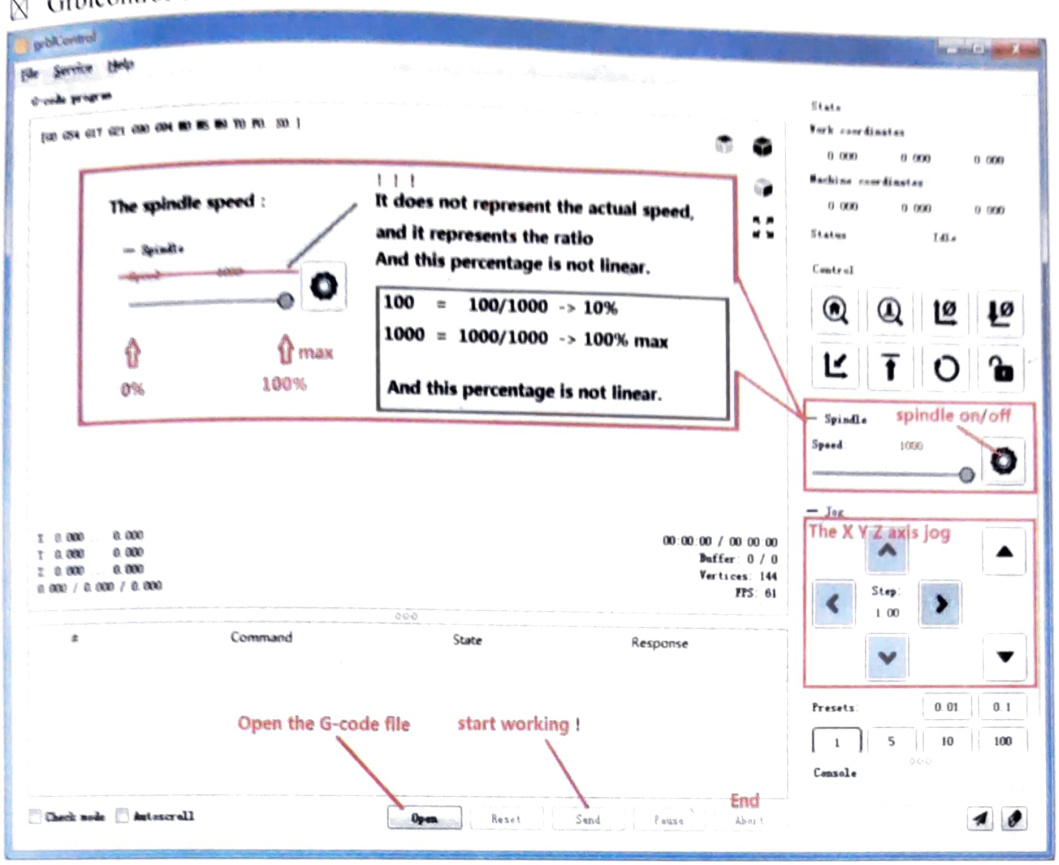


☑ Console window print " [CTRL+X] < Grbl 1.1f ['$' for help]" If the connection is successful.

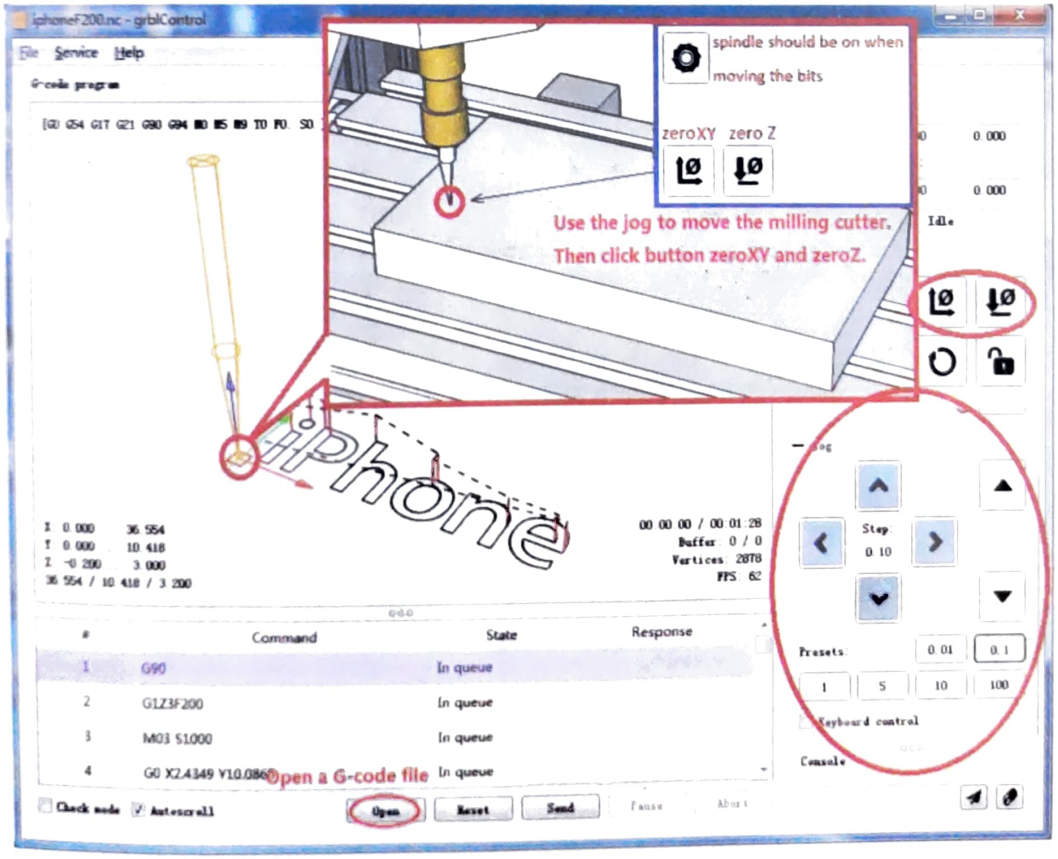
☑ Console window print " Serial port error 1: No such file or directory " indicate that the connection is failed.



Grblcontrol Use

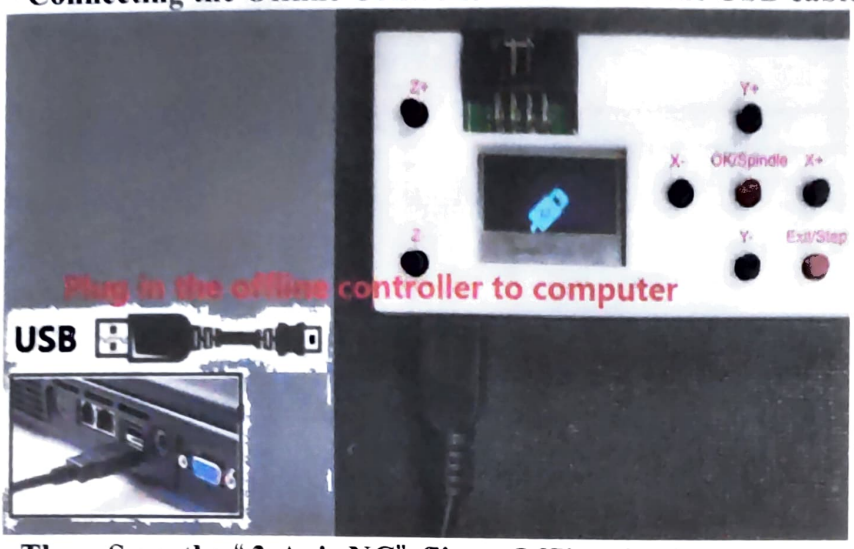

The spindle speed :
It does not represent the actual speed,
and it represents the ratio
And this percentage is not linear.
100 = 100/1000 -> 10%
1000 = 1000/1000 -> 100% max
And this percentage is not linear.
0%
100%
spindle on/off
The X Y Z axis jog
Open the G-code file
start working !
End

Tool setting



Mode-3Axis-B:(Machining with spindle) & Control with Offline Controller

- Connecting the Offline Controller to PC with the USB cable.

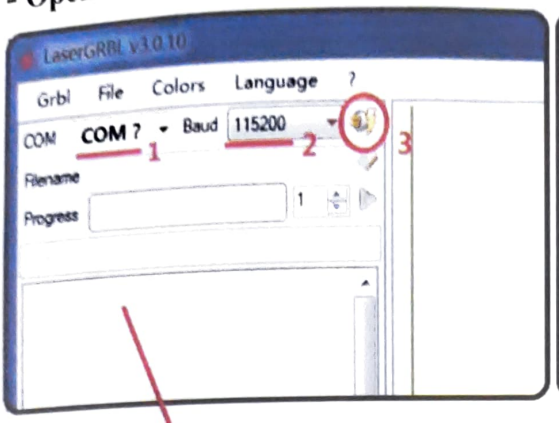


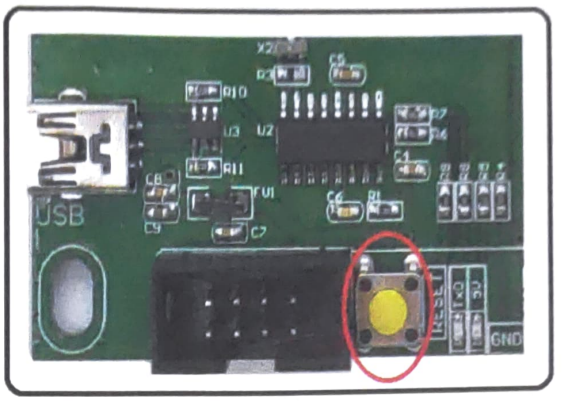
- Then. Save the " 3-Axis NC" flie to Offline Controller.
- Refer to the " Offline Controller User Manual" to work begin.

Notice: The 3-Axis NC files need users to design by themselves using CAM software.

Mode-2Axis-A:(Machining with Laser) & Control with PC

- Use the Usb cable for connecting computers.(Don't plug in the offline controller!)
- Open LaserGRBL software(laser -> laserGRBL) and install.

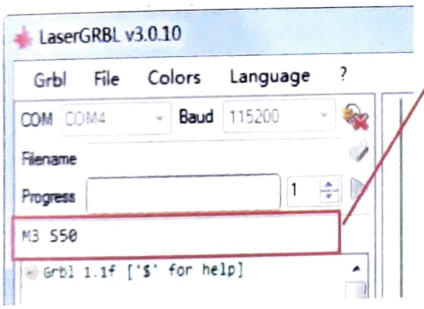




4. then press the button

☒ Console window print " Grbl 1.1f ['$' for help]" If the connection is successful.
☒ If the port selection is wrong, no information will be returned.

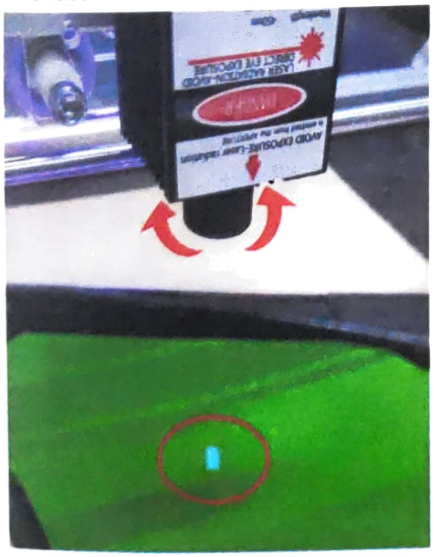
- **Focusing**

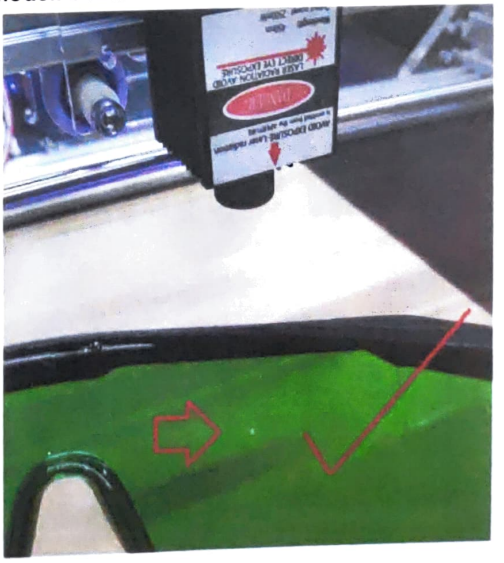


Input"M3 S50" .then press Enter.

(Or create a custom button if you want to be easy.
Refer to "CUSTOM BUTTOM")

The laser will be turned on with low power model. Then Rotate the lens to minimize the spot.

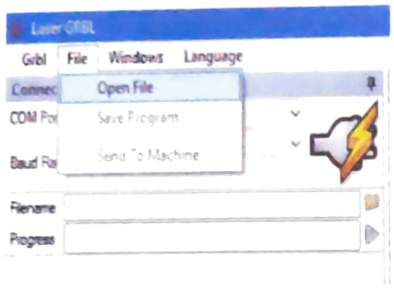


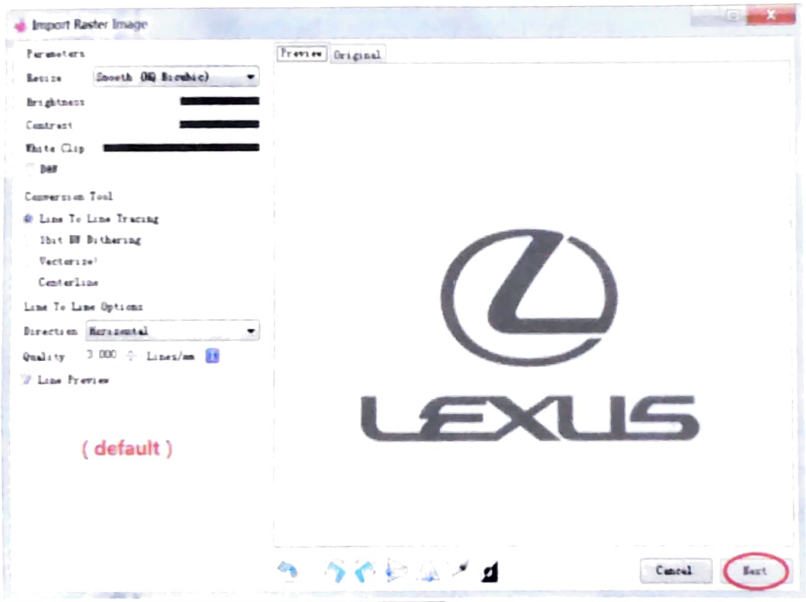


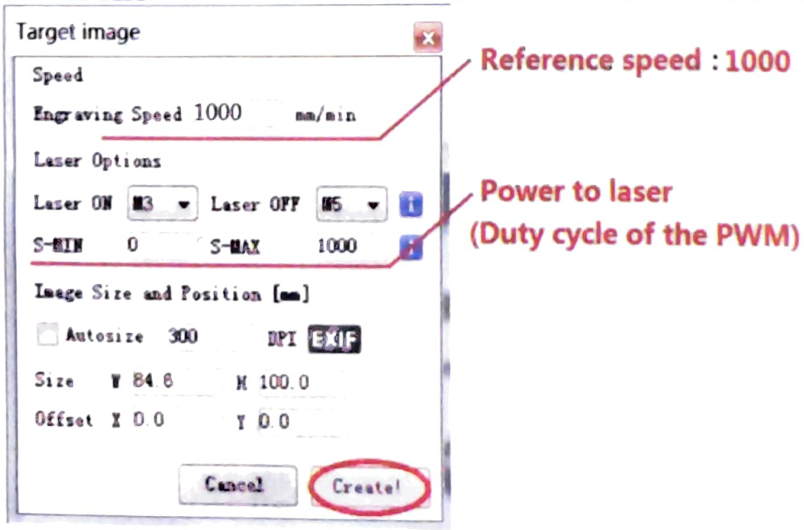
- RASTER IMAGE IMPORT

Raster import allows you to load an image of any kind in LaserGRBL and turn it GCode instructions without the need of other software. LaserGRBL supports photos, clip art, pencil drawings, logos, icons and try to do the best with any kind of image.

It can be recalled from "File, Open File" menu by selecting an image of type jpg, png or bmp.

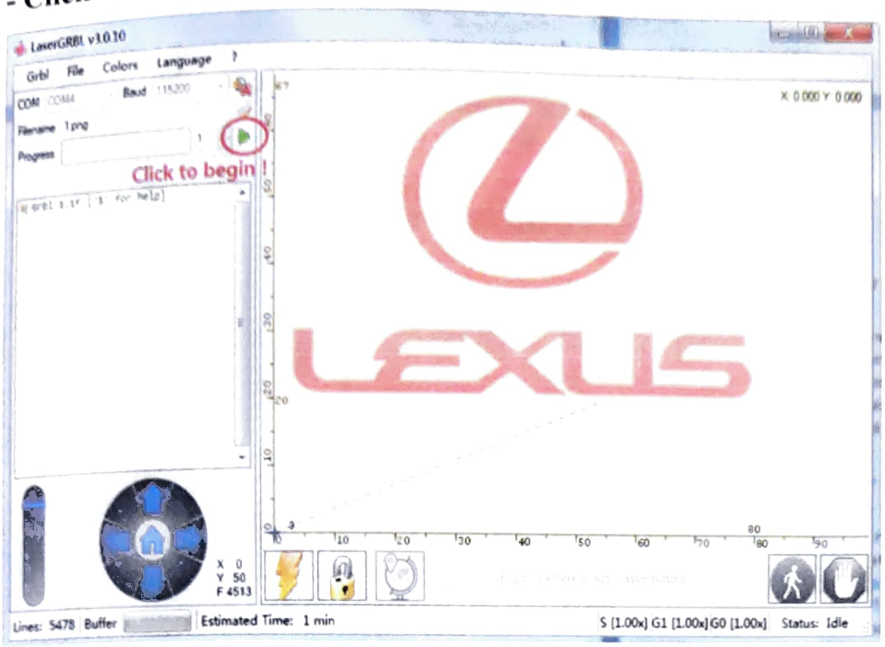






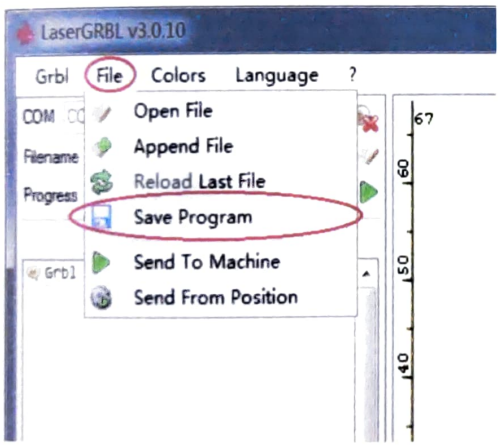
Notice: speed and S value are different with material.

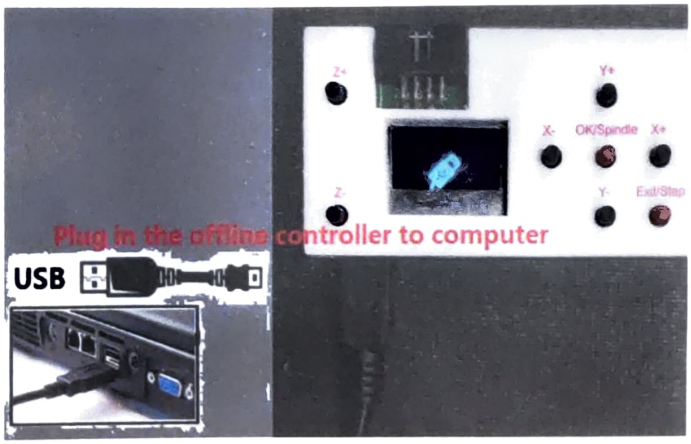
- Click this button to begin if use the computer control.



- Save program to " NC" file if use the offline controller.

(Mode-2Axis-B: (Machining with Laser) & Control with Offline Controller)





- Offline controller can be used as card reader through USB cable.

- Then Plug in the offline controller to control board. (Don't plug in the USB cable to computer)

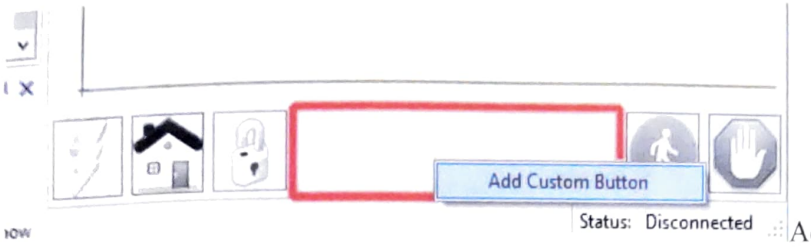
- Then. Refer to the " Offline Controller User Manual" to work begin.

EXPERT MODE

- **Expert mode lets users have more control over the machine. But Users should have some professional knowledge**

1. Custom button in the laserGRBL software.

LaserGRBL support custom buttons. Right-click in button area to add a new custom button.



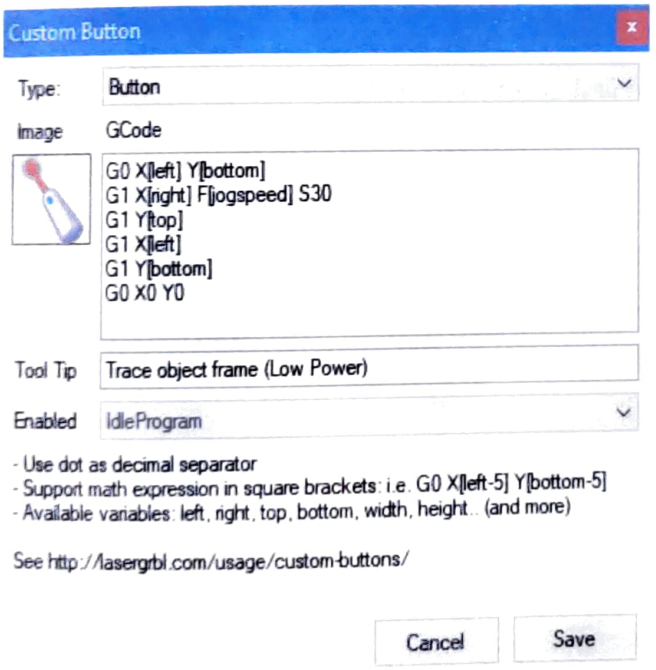
Add custom button

In custom button you can write a set of G-Code instruction to execute customized actions.

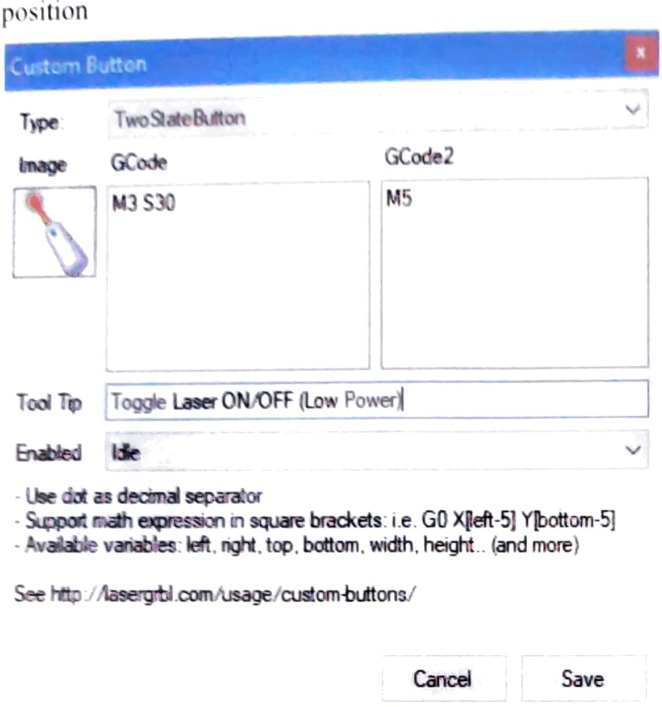
There is 3 types of custom buttons:

- Button
- TwoStateButton
- PushButton

Custom button of type "Button" contains a block of GCode to be executed on click. This could be used to launch a series of gcode instruction i.e. for trace a frame around an image or set a new zero position.



"TwoStateButton" contains two block of GCode. The first action is executed on a first click, then the second action is executed on a second click. This is very useful for action like toggling laser on-off to see its position



Toggle laser ON/OFF

"PushButton" is similar to"TwoStateButton" but the first action is executed on mouse down, the second is executed on mouse up.

Custom Buttons support a series of variables that can be used in expressions. Here is the full set of supported variables:

left	Left margin of loaded image (X)
right	Right margin of loaded image (X)
top	Top margin of loaded image (Y)
bottom	Bottom margin of loaded image (Y)
width	Width of loaded image
height	Height of loaded image
jogstep	Actual value of jog step cursor
jogspeed	Actual value of jog speed cursor
WCO.X	Actual value of WCO X (Work Coordinate Offset) use .X .Y .Z
MPos.X	Actual Machine position. Support .X .Y .Z
WPos.X	Actual Work position. Support .X .Y .Z

2. Default configuration

Grbl $$ configuration

#	Parameter	Value	Unit	Description
$0	Step pulse time	10	microseconds	Sets time length per step. Minimum 3usec.
$1	Step idle delay	25	milliseconds	Sets a short hold delay when stopping to let dynamics settle...
$2	Step pulse invert	0	mask	Inverts the step signal. Set axis bit to invert (00000ZYX).
$3	Step direction invert	5	mask	Inverts the direction signal. Set axis bit to invert (00000Z...
$4	Invert step enable pin	0	boolean	Inverts the stepper driver enable pin signal.
$5	Invert limit pins	0	boolean	Inverts the all of the limit input pins.
$6	Invert probe pin	0	boolean	Inverts the probe input pin signal.
$10	Status report options	1	mask	Alters data included in status reports.
$11	Junction deviation	0.010	millimeters	Sets how fast Grbl travels through consecutive motions. Lowe...
$12	Arc tolerance	0.002	millimeters	Sets the G2 and G3 arc tracing accuracy based on radial erro...
$13	Report in inches	0	boolean	Enables inch units when returning any position and rate valu...
$20	Soft limits enable	0	boolean	Enables soft limits checks within machine travel and sets al...
$21	Hard limits enable	0	boolean	Enables hard limits. Immediately halts motion and throws an ...
$22	Homing cycle enable	0	boolean	Enables homing cycle. Requires limit switches on all axes.
$23	Homing direction invert	0	mask	Homing searches for a switch in the positive direction. Set ...
$24	Homing locate feed rate	25.000	mm/min	Feed rate to slowly engage limit switch to determine its loc...
$25	Homing search seek rate	500.000	mm/min	Seek rate to quickly find the limit switch before the slower...
$26	Homing switch debounce delay	250	milliseconds	Sets a short delay between phases of homing cycle to let a s...
$27	Homing switch pull-off distance	1.000	millimeters	Retract distance after triggering switch to disengage it. Ho...
$30	Maximum spindle speed	1000	RPM	Maximum spindle speed. Sets PWM to 100% duty cycle.
$31	Minimum spindle speed	0	RPM	Minimum spindle speed. Sets PWM to 0.4% or lowest duty cycle.
$32	Laser-mode enable	0	boolean	Enables laser mode. Consecutive G1/2/3 commands will not hal...
$100	X-axis travel resolution	1600.000	step/mm	X-axis travel resolution in steps per millimeter.
$101	Y-axis travel resolution	1600.000	step/mm	Y-axis travel resolution in steps per millimeter.
$102	Z-axis travel resolution	1600.000	step/mm	Z-axis travel resolution in steps per millimeter.
$110	X-axis maximum rate	1000.000	mm/min	X-axis maximum rate. Used as G0 rapid rate.
$111	Y-axis maximum rate	1000.000	mm/min	Y-axis maximum rate. Used as G0 rapid rate.
$112	Z-axis maximum rate	800.000	mm/min	Z-axis maximum rate. Used as G0 rapid rate.
$120	X-axis acceleration	30.000	mm/sec^2	X-axis acceleration. Used for motion planning to not exceed ...
$121	Y-axis acceleration	30.000	mm/sec^2	Y-axis acceleration. Used for motion planning to not exceed ...
$122	Z-axis acceleration	30.000	mm/sec^2	Z-axis acceleration. Used for motion planning to not exceed ...
$130	X-axis maximum travel	200.000	millimeters	Maximum X-axis travel distance from homing switch. Determine...
$131	Y-axis maximum travel	200.000	millimeters	Maximum Y-axis travel distance from homing switch. Determine...
$132	Z-axis maximum travel	200.000	millimeters	Maximum Z-axis travel distance from homing switch. Determine...